

REMARKS

Clarifying amendments have been made to claims 1-3, 6-15, 17, 19-24, 27 and 29 and new dependent claim 30 has been added to clarify the scope of protection being sought. Former claims 16, 18 and 25-26 have been cancelled without prejudice, and claims 4, 5, and 28 have not been amended by the present amendment. Claims 1-15, 17, 19-24 and 28-30 are currently pending in the application. The Examiner has indicated that claim 28 is directed to allowable subject matter.

Claim Rejections - 35 USC 103

Claims 1-7, 11-15, 25-27 and 29 have been rejected under 35 USC 103(a) as being unpatentable over Buckbee (U.S. 2,322,415) in view of Rasch (GB 2,143,444). Claims 25-26 have been cancelled without prejudice. Reconsideration and withdrawal of the rejection of the remaining claims listed above is respectfully requested in view of the present claims and for the following reasons.

Referring to independent Claim 1 and dependent claims 2-7 and 11-15. Independent claim 1 as amended partially incorporates subject matter previously found in dependent claims 2 and 3 (now amended to remove the subject matter incorporated into claim 1) and dependent claim 16 (now cancelled). Amended claim 1 is directed to, with reference to Figures 1-6 by way of non-limiting example, a material classifier (12) for washing, classifying and dewatering a liquid-solid mixture containing solid material. The classifier includes a tank (30) defining a reservoir having a first end at which the liquid-solid mixture is received and a second end from which liquid from the liquid-solid mixture is discharged, the tank including an angled side wall (54) located between the first end and the second end. A first wheel (32) is mounted at least partially within the tank (30) adjacent the side wall (54) to rotate about a first wheel axis that is tilted at an angle relative to a horizontal reference (H) and that is substantially perpendicular to the side wall (54), the first wheel (32) having a plurality of spaced apart radially extending

scoops (34) about a periphery thereof for scooping up a first grade of solid material from within the tank (30) and subsequently discharging the scooped solid material from the side wall (54) to outside of the tank during rotation of the first wheel (32); and a second wheel (32) mounted at least partially within the tank adjacent the side wall (54) and further from the first end than the first wheel (32) to rotate about a second wheel axis that is tilted at an angle relative to a horizontal reference (H) and that is substantially perpendicular to the side wall (54), the second wheel (32) having a plurality of spaced apart radially extending scoops (34) about a periphery thereof for scooping up a second grade of solid material from within the tank and subsequently discharging the scooped solid material from the side wall to outside of the tank during rotation of the second wheel (32).

As will be explained in greater detail below, a number of features patentably distinguish the subject matter of present claim 1 from the cited references, including: (a) the cited references do not disclose and do not provide motivation, suggestion or incentive to modify the cited art to arrive at a material classifier having a wheel that is angularly mounted to rotate about a wheel axis that is tilted at an angle, where the wheel axis is substantially perpendicular to an angled tank sidewall that is adjacent the wheel; and (b) the cited references do not disclose and do not provide motivation, suggestion or incentive to modify the cited art to arrive at a material classifier having two wheels having the features noted above and arranged one after the other in a tank for scooping first and second grades, respectively of material for the tank for discharge.

The Office Action cites Buckbee as the primary reference, which the Examiner has acknowledged does not disclose a wheel that is angularly mounted to rotate about a wheel axis that is tilted at an angle. It should also be noted that Buckbee also does not disclose that the wheel axis is substantially perpendicular to an angled sidewall that is adjacent the wheel. The Office Action has indicated, however, that a further reference, Rasch discloses a bucket wheel that is inclined to rotate about a first wheel axis that is tilted at an angle, and has asserted that it would have been obvious to modify the apparatus of Buckbee to include the teachings of Rasch so that the wheel was angularly mounted to rotate about an axis that is tilted at an angle so that

the scoop buckets could hold the contents scooped up from the tank in the buckets without spilling the contents. It is respectfully submitted that the motivation hypothesized in the Office Action is non-existent, and in fact modifying Buckbee in the manner suggested would hamper rather than improve the performance of Buckbee.

In this regard, with reference to Figures 1 and 2 of Buckbee, the only embodiment disclosed in Buckbee is a dewatering wheel having a vertically oriented circular plate 10 with buckets 15 arranged in pairs about the circumference of the circular plate 10. The buckets 15 each have opposite side ends that are closed by terminal plates 21, and the buckets each have open tops so that they can discharge into respective chutes 33. Rasch discloses an inclined wheel separator that is of a fundamentally different design than what is shown in Buckbee. Referring to Figure 1 of Rasch, the inclined wheel 3 of Rasch includes radial vanes 8 that extend from spokes 7. The vanes 8 sweep settled material from within the tank up to and through an opening 6. It is respectfully submitted that given the fundamentally different designs of Buckbee and Rasch, modifying Buckbee to use an angled wheel will not be apparent to a person skilled in the art. For example, tilting axis 12 of the paired bucket design of Buckbee would result in a design where material falling from the bucket 15 on the upper side of the circular plate 10 would fall back against the circular plate 10 rather than into the chute 33. Furthermore, it is not apparent at all as to how tilting the axis 12 would allow the buckets to “hold the contents scooped up from the tank in the buckets without spilling the contents” – rather, it appears that such a modification applied to Buckbee would in fact cause more contents to spill.

In addition to the novel and non-obvious configuration of the individual scoop wheels, present claim 1 adds the further feature of having first and second scoop wheels for scooping up a first grade and a second grade of solid material, respectively. In this regard, present claim 1 incorporates features of former dependent claim 16. The Office Action cites a combination of three references to reject the subject matter of claim 16 as unpatentable over Buckbee in view of Rasch in further view of Tanii (U.S. 5,490,928). As a preliminary point, no indication is provided as to the motivation, suggestion or incentive to modify Buckbee according to the

tandem configuration of Tanij, and accordingly the rejection of the subject matter of claim 16 is, on its face, improper. In any event, it should be noted that the configuration of Tanij pertains to a drain-off drum and a classifying drum that are combined coaxially and integrally with each other through a short pipe to form a main body (see column 2, lines 36-44). Thus, modification of Buckbee according to Tanij would result in two side-by-side coaxial scoop wheels, a configuration which is not relevant to the patentability of present claim 1 (or former claim 16). It should further be noted that as further distinction between the configuration of present claim 1 and the cited references, the two wheel classifier of present claim permits a first grade of particulate material to be removed at the first scoop wheel and a second grade to be removed by the second scoop wheel, with dewatering occurring at both wheels. The configuration of Tanij dewaterers at the “drain-off drum”, then classifies at the “classifying drum”. Using two separate wheels to perform the classifying function can be advantageous as it permits for separate control and configuration of the two wheels, providing greater flexibility.

Thus, for the reasons stated above, Applicant respectfully submits that the 35 U.S.C. 103(a) rejection of claim 1 and its dependent claims that remain pending is not proper. As is well established, obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination. In the present case, there is no motivation, suggestion, or incentive provided in the cited art to combine the cited art to arrive at the subject matter of the present claims.

Referring to independent method claim 27. Present independent method claim 27 is directed to a method of washing, classifying and dewatering material, that includes providing first and second scoop wheels each having a plurality of scoops located about a periphery thereof and mounted to rotate about a respective scoop wheel axis that is tilted relative to a horizontal reference, the scoop wheels being serially arranged one after the other in a tank with the wheel axes thereof being substantially perpendicular to a flow direction of liquid through the tank, each scoop wheel having a downwardly oriented first side, the tank having an upwardly extending wall adjacent the first sides of the scoop wheels. The method also includes (i) adding a liquid-

solid mixture to a first end of the tank to a predetermined fill level; (ii) rotating the first scoop wheel to scoop settled solid material of a first grade from a bottom of the tank and then subsequently discharge the scooped material from the first side of the first scoop wheel over an upper edge portion of the wall; (iii) rotating the second scoop wheel to scoop settled solid material of a second grade from the bottom of the tank and then subsequently discharge the scooped material from the first side of the second scoop wheel over a further upper edge portion of the wall; and (iv) discharging liquid from a second end of the tank.

Thus, amended claim 27 incorporates elements similar to those found in amended claim 1 and is patentable over the cited references for similar reasons. New dependent claim 30 adds the further patentable feature (described in the specification as originally filed) of recombining in selected amounts the materials discharged from the tank by the first and second scoop wheels.

Referring to independent claim 29. Applicant submits that present independent claim 29 is directed to patentable subject matter for the following reasons. Similar to Applicant's comments provided above, the cited references (Buckbee in view of Rasch) do not disclose and do not provide motivation, suggestion or incentive modify the cited art to arrive at a material classifier having a scoop wheel that is mounted to rotate about an axis that is substantially perpendicular to a planar sidewall portion and that is non-parallel to a horizontal reference, where the scoop wheel has a first side that is substantially parallel to the sidewall portion with circumferentially spaced scoops that have open ends facing the sidewall portion for discharging material over an discharge edge. For the reasons stated above, the dewatering wheel of Buckbee and the inclined wheel separator of Rasch are of sufficiently different construction and operation that modifying Buckbee in view of Rasch to arrive at the subject matter of claim 29 would not be apparent.

Claims 8-9, 16, 18, 20-22 and 24 have been rejected under 35 USC 103(a) as being unpatentable over Buckbee (US 2,322,415) in view of Rasch (GB 2,143,444) and in further view of Tanji (U.S. 5,490,928). As indicated above, claim 16 has been canceled and at least part of

the subject matter thereof incorporated into present claim 1. Claim 18 has also been cancelled. Claims 8-9, 20-22 and 24 depend from claim 1 and are accordingly patentable for the same reasons as stated above in respect of claim 1 and accordingly reconsideration and withdrawal of the rejection of such claims is respectfully requested.

Claim 23 has been rejected under 35 USC 103(a) as being unpatentable over Buckbee in view of Rasch in view of Tamii and in further view of Nordhus (U.S. 4,915,826). It is noted that four separate references had to be cited in combination to arrive at the subject matter of claim 23. Among other things, claim 23 depends from claim 1 and is accordingly patentable for the same reasons as stated above in respect of claim 1, and accordingly reconsideration and withdrawal of the rejection of claim 23 is respectfully requested.

Allowable Subject Matter

Applicant notes that the Examiner has indicated that dependent claims 10, 17 and 19 were objected to as being dependent on a rejected base claim, but would be allowable if rewritten in independent form including all the limitations of the base claim, and furthermore has indicated that claim 28 is allowed.

Conclusion

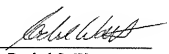
It is respectfully submitted that the application is currently in condition for allowance which earnestly solicited.

If the Examiner has any further questions or concerns, the Examiner is invited to contact the Applicant's undersigned attorney/agent.

If any fees are occasioned by this Amendment, the Commissioner is hereby authorized to charge them to, or to credit, Deposit Account 08-2442 of the undersigned.

Respectfully submitted,
HODGSON RUSS LLP
Attorneys for Applicants

By: _____


Rachel S. Watt
Reg. No. 46,186

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HODGSON RUSS LLP
One M&T Plaza
Suite 2000
Buffalo, New York 14203-2391
Tel: (716) 856-4000